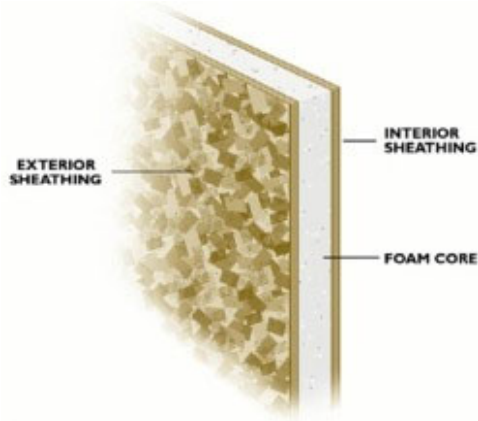


Structural Insulated Panels (SIPs)

Factsheet from Coconino County Sustainable Building Program

SIPs panels consist of an insulated core of expanded polystyrene or some other rigid foam and a structural skin of oriented strand board (OSB) or some other structural surface. SIPs are used for floors, walls and roofs in residential and commercial buildings and replace conventional wood framing with insulated infill. Panels are fabricated by the manufacturer according to house plans and are quickly assembled onsite. This can reduce site labor and time and exposure to the weather. SIPs are also made in large sizes up to 8 ft by 24 ft, which can reduce the number of seams and points of entry for air. SIPs are more energy efficient than conventional homes because the continuous rigid core provides superior insulation with little draft, and provides for an airtight home.



Advantages: Strength (withstands winds up to 160mph, earthquake resistant), good insulation value, very quiet, good fire resistance, less construction time

Appearance/Style: SIPs are compatible with conventional sidings.

Structural Requirements : SIPs need no other bracing up to three stories. (Structurally SIPs can be compared to an I-beam)

Energy Efficiency : Whole wall R values for a SIP wall with 3.5 in of foam has been shown in the lab to perform as R-14. SIPs built homes can save up to 50% in energy costs over traditional wood-framed homes.

Recycled Content: Ask individual manufacturers for recycled content. (OSBs are often made from small-diameter “waste” trees, and SIPs homes can use up to 30% less wood than a traditional wood-frame home.)

Health Issues: Since SIPs homes are air-tight, it is important to pay particular attention to the ventilation system. If the house were to burn, some skins (like OSB) emit very toxic fumes. However, since there is no oxygen in the walls, fires do not spread rapidly in a SIP house.

Ease of Construction: ICFs can be heavy, (plank forms are light and require bracing before concrete is poured) but are usually easily maneuvered and put in place by two or more people. Construction is relatively easy.

Cost estimates: SIPs homes are comparable in cost to traditional wood-frame homes, with some extra savings in reduced costs for smaller heating and cooling units due to the better energy performing structure.

Considerations: Use non ozone-depleting foam (expanded polystyrenes are ok, extruded polystyrenes use HCFCs as the expanding agent). Manufacturers are experimenting with a variety of insulation materials, including straw. Insects and rodents may be a problem, as with any house. Make certain that the panel as a whole is code compliant, not just the components of the panel. This information is provided by the manufacturer.

Resources :

www.sips.org - Structural Insulated Panel Association

www.eere.energy.gov/consumerinfo/refbriefs/bd1.html - DOE discussion of SIPs

www.taunton.com/finehomebuilding/pages/h00069.asp - Fine Homebuilding article about SIPs

www.greenbuilder.com/sourcebook/StructWall.html - SIPs info from Sustainable Building Sourcebook